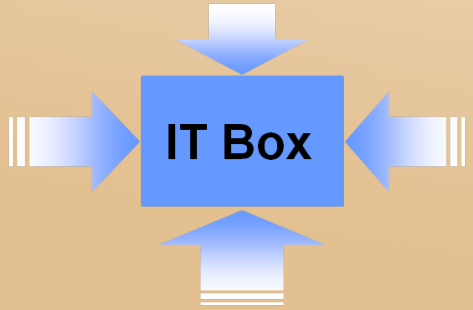
The Information Technology (IT) Box
A Primer



Sources:

- CJCSI 3170.01H, 10 Jan 2012
- JCIDS Manual, 19 Jan 2012
- Joint Staff, J-8
- Joint Staff, J-6

Patrick Wills
Associate Dean, Executive Programs,
Requirements Management,
and International Acquisition
Defense Systems Management College
Defense Acquisition University
work: 703-805-4563 cell: 703-615-5234

Revised 19 Oct 2012

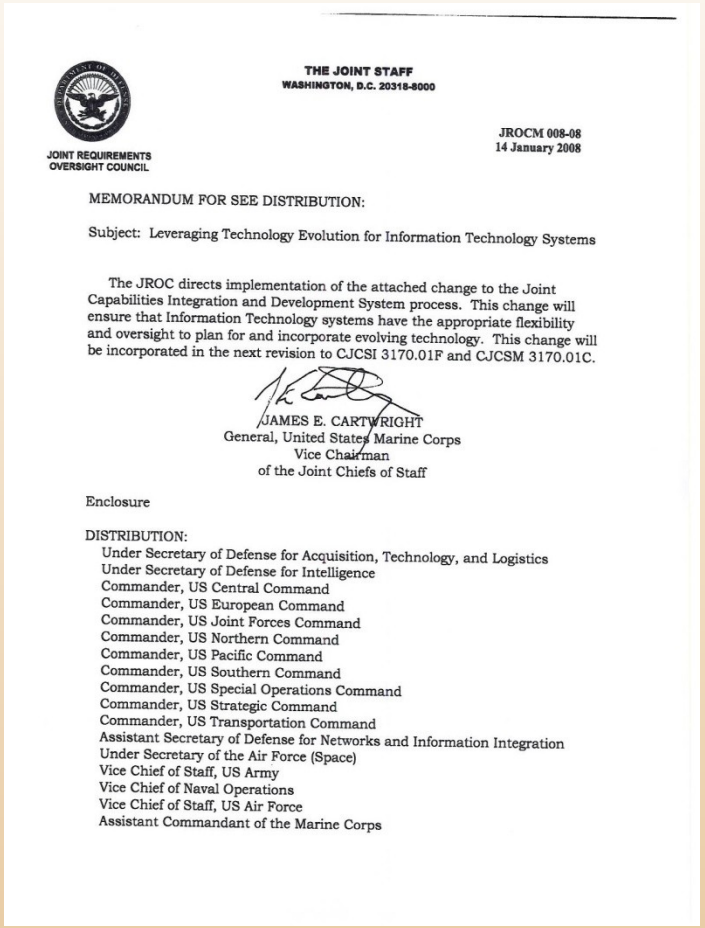
IT Box Topics

- IT Box Background
- Assumptions
- Applicability
- Governance
- Application
- Information Systems Initial Capabilities Document (IS ICD)
- Follow-On Documents
- IS Requirements/Acquisition Process
- Examples
- Lessons Learned
- Conclusions

ome charts have additional information in notes pages

IT Box Background

- Why implement an IT box?
- Moore's Law:
  - "The number of transistors on an integrated circuit doubles approximately every 18-24 months."
  - The US has been able to leverage rapidly-evolving IT for decisive military advantage.
  - However, the JCIDS process does not provide the required flexibility to take full advantage of evolving commercial information technology.
- JROCM 008-08
  - The JROC wants to ensure the IT programs have the flexibility to "plan for and incorporate evolving technology" throughout the program's lifecycle.
- CJCSI 3170.01H



THE JOINT STAFF
WASHINGTON, D.C. 20318-9000

JOINT REQUIREMENTS OVERSIGHT COUNCIL

JROCM 008-08
14 January 2008

MEMORANDUM FOR SEE DISTRIBUTION:

Subject: Leveraging Technology Evolution for Information Technology Systems

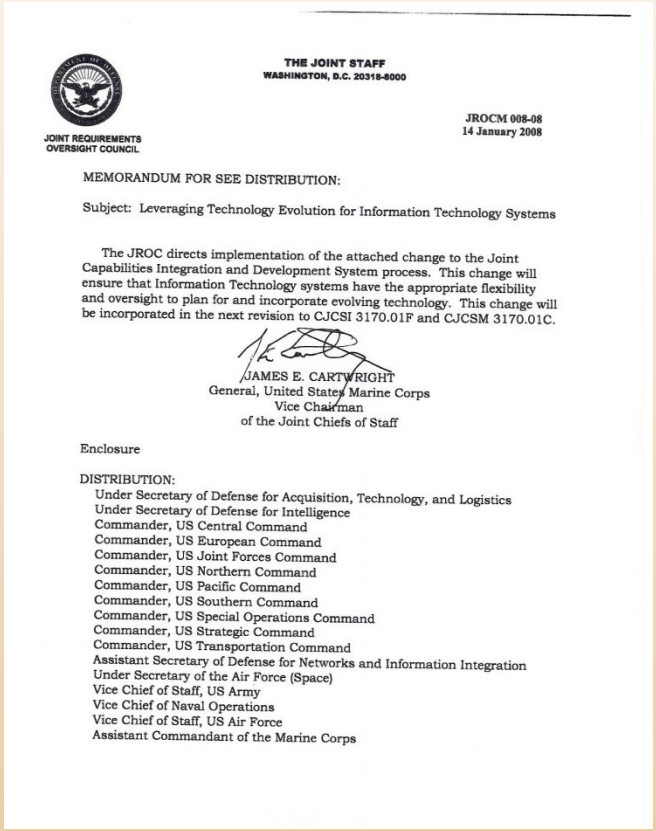
The JROC directs implementation of the attached change to the Joint Capabilities Integration and Development System process. This change will ensure that Information Technology systems have the appropriate flexibility and oversight to plan for and incorporate evolving technology. This change will be incorporated in the next revision to CJCSI 3170.01F and CJCSM 3170.01C.

JAMES E. CARTWRIGHT
General, United States Marine Corps
Vice Chairman
of the Joint Chiefs of Staff

Enclosure

DISTRIBUTION:
Under Secretary of Defense for Acquisition, Technology, and Logistics
Under Secretary of Defense for Intelligence
Commander, US Central Command
Commander, US European Command
Commander, US Joint Forces Command
Commander, US Northern Command
Commander, US Pacific Command
Commander, US Southern Command
Commander, US Special Operations Command
Commander, US Strategic Command
Commander, US Transportation Command
Assistant Secretary of Defense for Networks and Information Integration
Under Secretary of the Air Force (Space)
Vice Chief of Staff, US Army
Vice Chief of Naval Operations
Vice Chief of Staff, US Air Force
Assistant Commandant of the Marine Corps

JROCM 008-08 Detail



THE JOINT STAFF
WASHINGTON, D.C. 20318-9000

JOINT REQUIREMENTS OVERSIGHT COUNCIL

JROCM 008-08
14 January 2008

MEMORANDUM FOR SEE DISTRIBUTION:

Subject: Leveraging Technology Evolution for Information Technology Systems

The JROC directs implementation of the attached change to the Joint Capabilities Integration and Development System process. This change will ensure that Information Technology systems have the appropriate flexibility and oversight to plan for and incorporate evolving technology. This change will be incorporated in the next revision to CJCSI 3170.01F and CJCSM 3170.01C.

JAMES E. CARTWRIGHT
General, United States Marine Corps
Vice Chairman
of the Joint Chiefs of Staff

Enclosure

DISTRIBUTION:
Under Secretary of Defense for Acquisition, Technology, and Logistics
Under Secretary of Defense for Intelligence
Commander, US Central Command
Commander, US European Command
Commander, US Joint Forces Command
Commander, US Northern Command
Commander, US Pacific Command
Commander, US Southern Command
Commander, US Special Operations Command
Commander, US Strategic Command
Commander, US Transportation Command
Assistant Secretary of Defense for Networks and Information Integration
Under Secretary of the Air Force (Space)
Vice Chief of Staff, US Army
Vice Chief of Naval Operations
Vice Chief of Staff, US Air Force
Assistant Commandant of the Marine Corps

- Define minimum capability levels based upon what is achievable with today's technology. (IS ICD paragraph 4 and JROC briefing)
- Describe process for approving capability enhancements. Who will have the authority to manage requirements? (JROC Briefing)
- Describe the plan for delivering capability (JROC briefing):
  - How often will releases of new or enhanced capability be delivered?
  - What is the plan for assessing the application of new technologies?
  - What is the plan for technology refresh?
- Identify the level of effort funding which will be used for the software development effort. (IS ICD paragraph 4

ome charts have additional information in notes pages

Assumptions

- The Acquisition and Programming Communities Agree That IS Development is Different From Major Weapon Systems
  - Modify their processes and documentation expectations accordingly (modifications to DODI 5000.02 in work)
- The Test and Certification Communities Can Deliver on More Responsive Test and Certification Processes to Enable More Rapid Delivery of Capabilities
  - Necessitates incremental/iterative development and testing
- Validation Authority for Managing Requirements can be Pushed Down to the Lowest Level to Allow for Rapid Changes/Decisions (Currently Within

Reasoning for Additional Change

- The Current JCIDS Process and Documents are Structured to Support Development of Major Hardware Weapon Systems
- JCIDS and Documents are not Supportive of the Rapid Pace of Development Necessary With IS Systems/Capabilities
  - Previous JCIDS Manual Enclosure C (IT Box process) was a good starting point to address a more agile and responsive process, but requires adjustment – Modified IT Box
- In Conjunction With Changes in the Acquisition Process, the JCIDS Process Needs to be Adapted to Meet the Needs of the Operational User so that New Capabilities can be Delivered Rapidly, and Adapted as Necessitated by Changes in the Operational Environment
- Desired Outcome - Provide Agile and Responsive Requirements/ Capability Needs Process to Enable Rapid Development of IS Capabilities

ome charts have additional information in notes pages

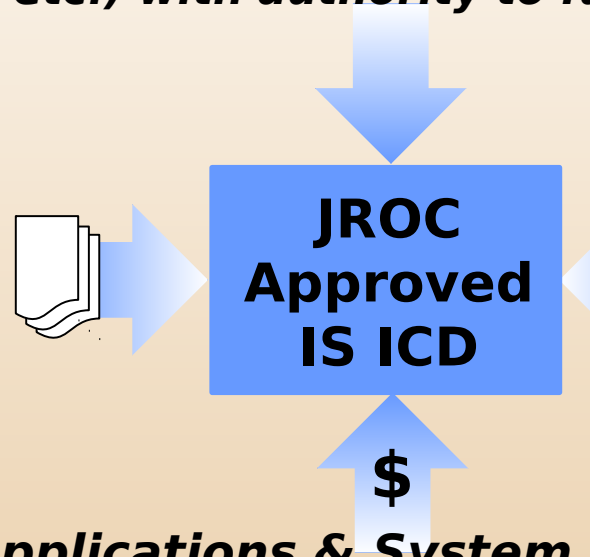
Applicability of the IT Box
JCIDS Manual, 19 Jan 2012

- IT Box Applies to:
  - IS with software development only
  - Includes integration onto commercial off-the-shelf hardware
  - Program costs exceed $15 million
- IT Box DOES NOT Apply to:
  - Systems with a developmental cost less than $15 million
  - Defense business systems
  - Systems which are an integral part of a weapon or weapon system which enables weapon capabilities and are considered part of the weapon system program
- 19 Jan 2012 JCIDS Manual Expands on JROCM 000-08 by Implementing the “IS ICD”. Provides Greater Flexibility and Alignment with:
  - Sec. 804, NDAA 2010 (Develop new approach for delivering IT capabilities)
  - Sec. 933, NDAA 2011 (Develop strategy for rapid acquisition of tools, applications, and other capabilities for cyber warfare)

Definition of the IT Box

Requirements Organization & Oversight

Component Requirements Oversight Council (AFROC, AROC, R3B, MROC, etc.) with authority to further delegate



Capabilities Required

Capability statements and required performance from ICD

Hardware Refresh & System Enhancements & Integration

Desired Investment level

Applications & System Software Development & Acquisition

Desired Investment level

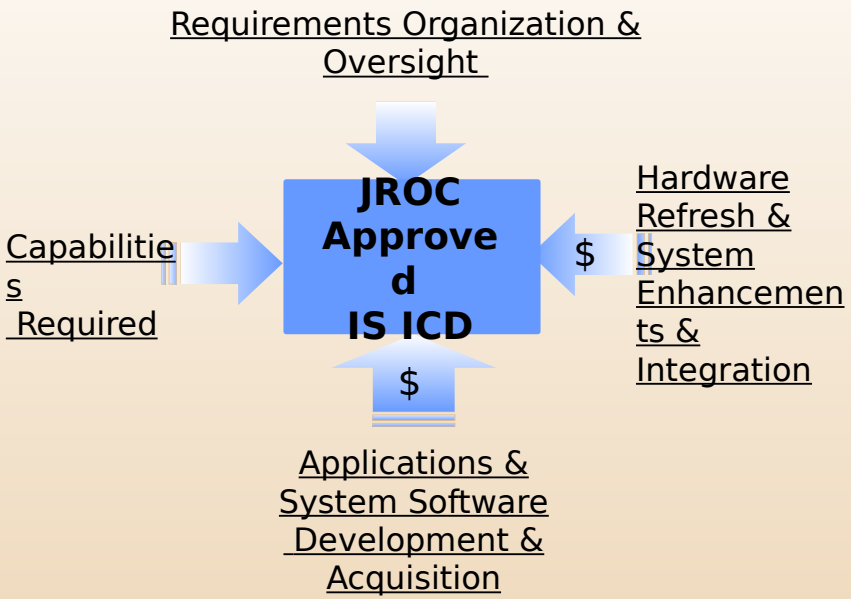
- ***Biannual status review by the Lead FCB***
- ***No return to the JROC unless new core capabilities added to the ICD***
- ***Return if expenditures exceed ROM estimate by 10% or failure to meet performance minimums***
- ***CDDs and CPDs only required for MDAPs***

ome charts have additional information in notes pages

Presentation Template

Key Points:

- Describe the overall bounds of an IS program in order to reduce return trips to the JROC for approval of improved capabilities.
- Provide to FCB/JCB/JROC as part of the approval process for an IS program's ICD.
- Only applies to programs that do not need to develop hardware systems (leveraging COTS/GOTS hardware).
- Once ICD is approved, no need to return to the JROC with a CDD or CPD, unless the IS ICD results in a MDAP.



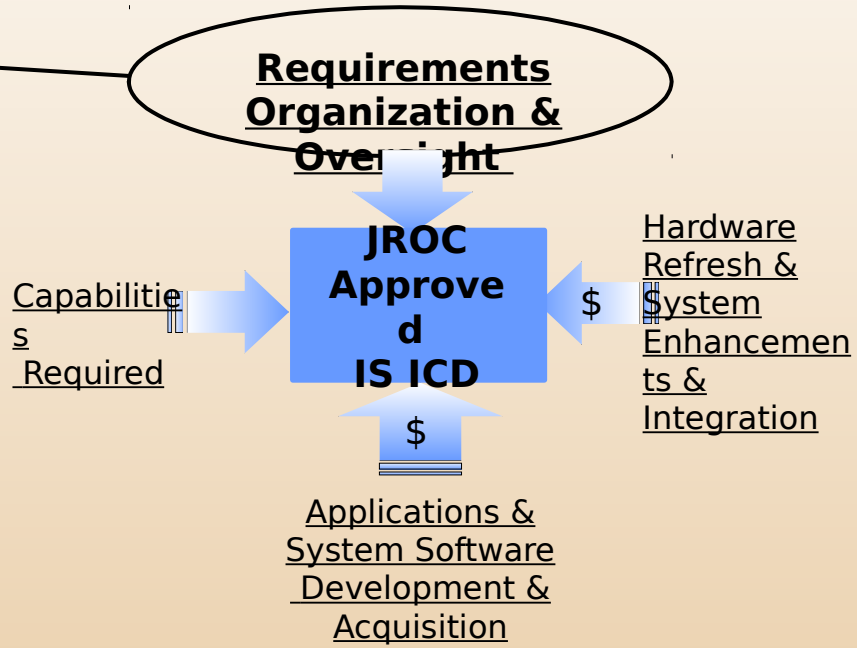
Governance and Requirements Management

Requirements Organization And Oversight:

Determines schedule/content of capability releases based upon collaboration between users and the program manager

Guidance:

- Name the flag-level body holding authority over and governance for requirements
- Identify chair
- Identify represented organizations, including all stakeholders. Include the acquisition community to provide advice on technical feasibility, cost and schedule.



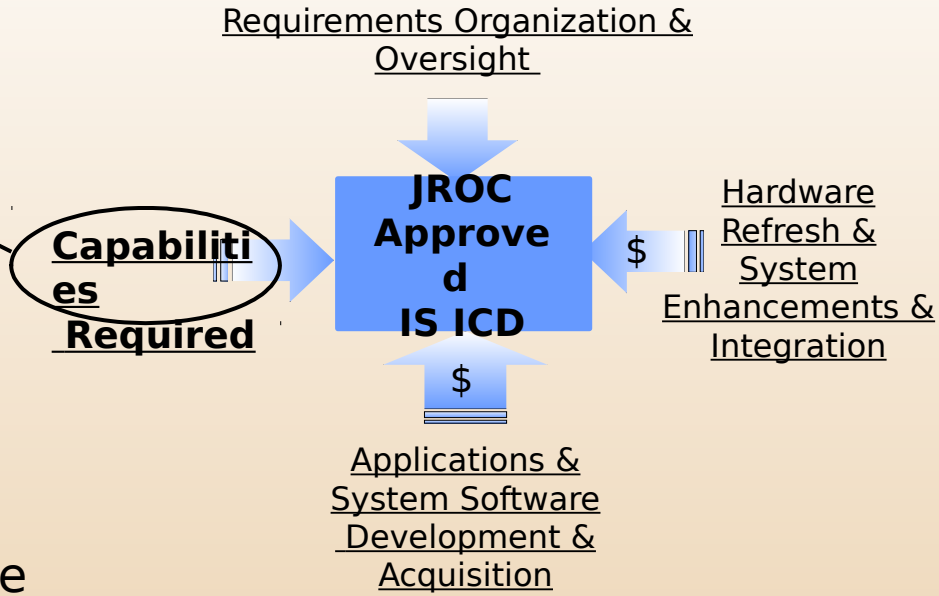
Capabilities Required

Validated Capability Requirements And Initial Minimum Levels:

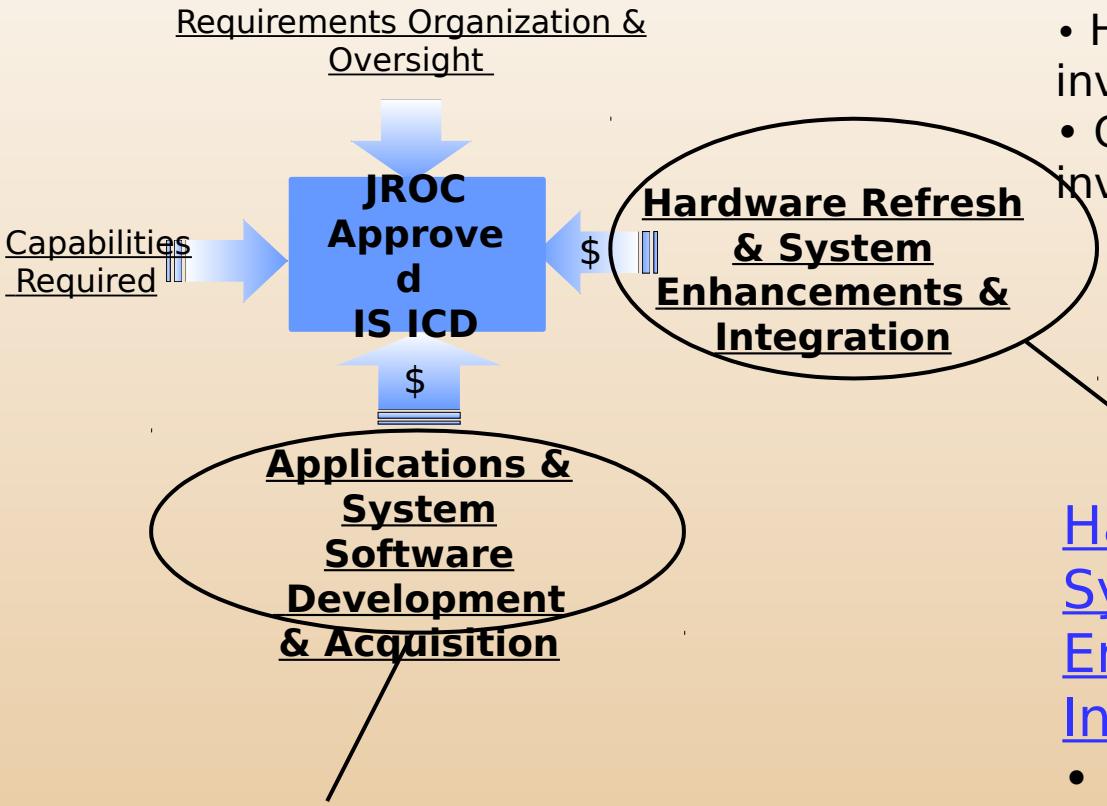
The initial minimum performance levels required for the entire IS program.

May be less than traditional Threshold values. Allows for incremental improvement from the 70% level to 100% of what would have been the Threshold.

Objective values not required nor briefed. It is understood and expected that performance will move beyond the Threshold as technology capability improves.



Estimated Development and Sustainment Costs



IS ICD contains ROM estimates

- How much can the DoD afford to invest in this capability?
- Consistent annual level of investment

Hardware Refresh and System Enhancements & Integration:

- Estimated sustainment costs over the life cycle of the program..

Application and System Software Development and Acquisition:

- Estimated development and integration costs for the lifetime of the program.

ome charts have additional information in notes pages

Information System (IS) ICD

- IS ICDs Implement the “Information Technology (IT) Box” Model
- IS ICDs are Required When the Solution Requires Research and Development, and Acquisition of Applications with a Projected Software Development Cost of Over $15 Million
- Not Used for Software Embedded as a Subset of a Capability Solution Developed IAW Other Validated JCIDS Documents
- IS ICD Applies to:
  - Commercial off the Shelf (COTS)/Government off the Shelf (GOTS) software, and associated hardware without modification
  - Commercial capability solutions with integrated, DoD-specific performance standards
  - Additional production or modification of previously developed U.S and/or Allied or interagency systems or equipment
  - Development, integration, and acquisition of customized application software

“IT Box” model calls for fewer iterations of validating documents through the JCIDS process by describing the overall IS program in the IS ICD, and delegating validation of detailed follow-on requirement and solution oversight to a flag-level organization other than the JROC or JCB.

ome charts ha

Information System (IS) ICD (Con't)

- CDDs & CPDs are Not Required as Successor Documents for non-MDAP IS; Sponsors Have Management Flexibility for Alternate Documents for non-MDAP IS
- JCIDS Manual Provides Examples of Potential IS ICD Follow-On Documents (Actual Names, Content, and Approval TBD by the Delegated Validation Authority):
  - Requirements Definition Package (RDP) – identifies KPPs and non-materiel changes
  - Capability Drop (CD) – lower level document that specifies the characteristics of a "widget" or "app" for partial deployment of the solution
- Business IS are not normally subject to JROC Review – However, FCBs have visibility of business case documents posted to KM/DS and if FCB decides the system has "joint equities" can recommend joint oversight.

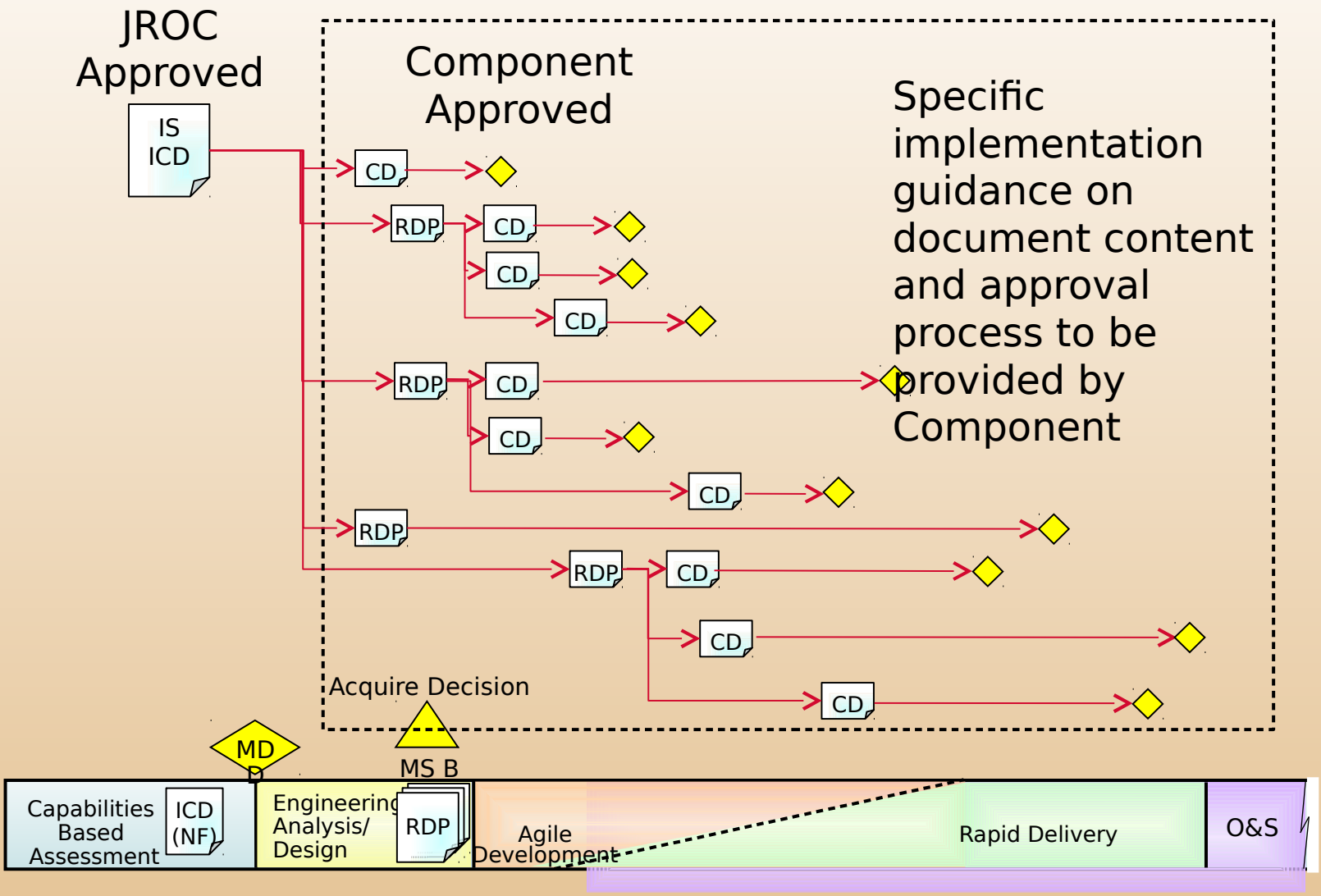
Requirements Definition Packages (RDPs)

- RDP is an Example – It Is Not a JCIDS Document
  - Created to show how requirements can be broken into deliverable increments
  - Components define content and approval process
- Provides a More Detailed Definition of One or More Capabilities in the ICD
  - Enables detailed design activity
  - Enables detailed costing of the requirements
- Provides a Link Between the ICD (Requirements) and the Acquisition and Programming Processes
- Approved by the Delegated Requirements Management Authority
  - FO/GO-level body that holds authority over, and provides governance for requirements

Capability Drops (CDs)

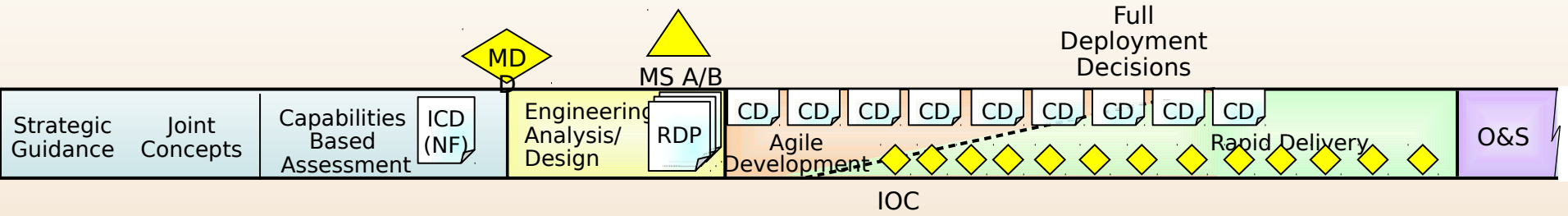
- CD is an Example – It Is Not a JCIDS Document
  - Managing delivery of capabilities through more specifically defined subsets of an RDP
  - The details of how to do this are left to the components and the acquisition process
- The RDP is Further Broken Down into CDs to Deliver Individual “Widgets” or “Slices” of Capability
- The Results of the CD Development are Released Incrementally Through Full Deployment Decisions as They Are Ready
- Approved by the Delegated Requirements Management Authority and the Component PM lead

IS Requirements/Acquisition Process



ome charts have additional information in notes pages

Requirements/Acquisition Process (con't)



- This Shows a Very Streamlined Process for Truly Agile IS Development
  - The ICD is developed in a new format tailored to IS capabilities
  - Following the MDD, *one or more* RDPs are developed to further refine the requirements for the needed capabilities
  - The RDP is further broken down into CDs to deliver individual "widgets" of capability
  - The results of the CD development are released incrementally through Full Deployment Decisions
- For IS that are also MDAPs, CDD & CPD are Required.

Execution of the IT Box Process

- Execution Will Vary Depending on Whether This is a New Set of Capabilities or Whether Capabilities are Being Added to an Existing IS Capability Set
- A New Set of Capabilities is Initiated Through a New IS ICD
- Adding Capabilities to an Existing System May Enter at any Stage Along the Process
  - In many cases, an update to an existing RDP is all that is required
  - A major expansion of capabilities may require a new IS ICD
- Modifying or Enhancing Existing Capabilities Should Only Require a Mod or a New CD to Document What is Needed
  - There may be cases where the mod or enhancement has impact on the architectures or data and this will require a mod to the RDP to fully document the change

Converting Existing ICDs and CDDs

- ICD Conversion
  - Brief the FCB/JCB on the request
  - Include information necessary for the IT Box
    - Minimum performance for capabilities
    - ROM costs for development and sustainment
    - Identification of Requirements Management GO/FO body
  - Work with FCB to draft appropriate JROCM
- CDD Conversion (for MDAPs)
  - Brief the FCB/JCB on the request
    - Show KPP changes from Threshold/Objective to minimum performance required
    - Identify Requirements Management GO/FO body
    - Capture costs from the Affordability section of the CDD
  - Work with FCB to draft appropriate JROCM

ome charts have additional information in notes pages

Example: Integrated Strategic Planning & Analysis (ISPAN)

Organization & Oversight

Flag-level oversight through ISPAN Requirements Governing Council (IRGC)

Chair: GS/CD

Members: ESC SPM, USSTRATCOM CIO

GS COS, J2, J3, J5, J6

HQ J63, J82, J83

Key Performance Parameters

KPP #1 - 4: define mission planning capabilities required services and critical user access devices: 0.99

KPP # 5, 7, and 8 – define material availability/quality of service performance

KPP #6 Net-Ready requirement

"Boundaries"
JROC-Approved ISPAN
Oversight – ASD(NII)
Execute – AF/PEO ESC

Hardware Refresh & System Enhancements & Integration

- Per year (FY04-20) = $22.8M (TY)
- Lifecycle cost = $387.3M (TY)
- Per FY = $355.8M average/yr

Application and Systems Software Development

- Per year (FY04-20 = $54.7M (TY)
- Lifecycle cost = $929.9M (TY)

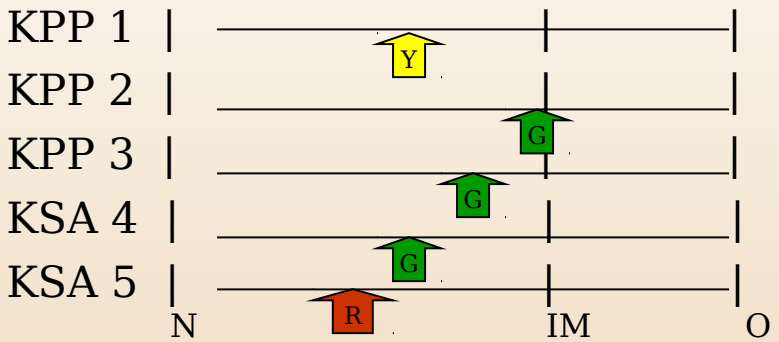
ome charts have additional information in notes pages

IT Box Cost Driver Quad Chart

Top Cost Drivers

1. A, % of program cost
2. B, % of program cost
3. C, % of program cost
4. D, % of program cost
5. E, % of program cost

Performance (KPPS & Select KSAs)

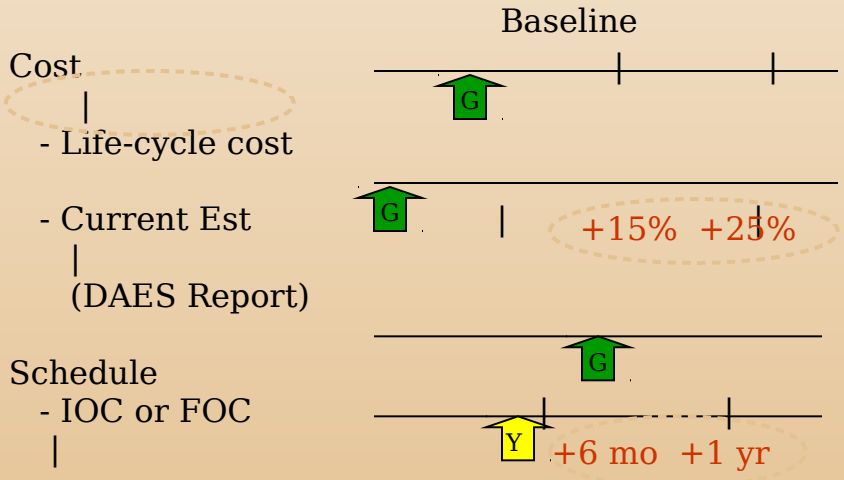


N = No capability IM = Initial Minimum O = Objective

Technology Readiness Assessment

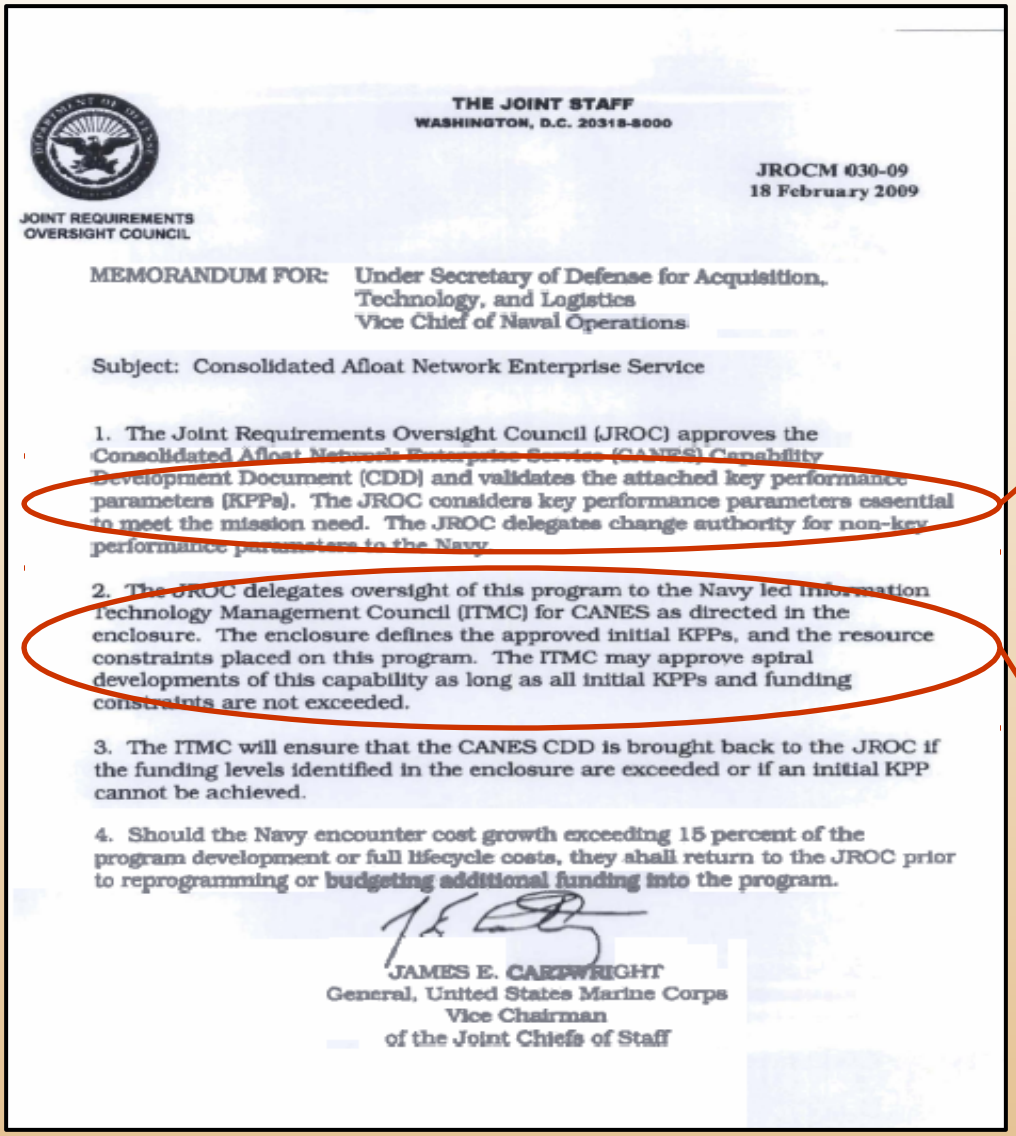
Critical Technologies	Critical Assessment	Est @ Next Milestone
Technology A	TRL #	TRL #
Technology B	TRL #	TRL #
Technology C	TRL #	TRL #
Technology D	TRL #	TRL #

Acquisition Program Baseline (APB)



Some charts have additional information in notes pages

Example JROCM – Consolidated Afloat Networks & Enterprise Services (CANES)



THE JOINT STAFF
WASHINGTON, D.C. 20318-9000

JOINT REQUIREMENTS OVERSIGHT COUNCIL

JROCM 030-09
18 February 2009

MEMORANDUM FOR: Under Secretary of Defense for Acquisition, Technology, and Logistics
Vice Chief of Naval Operations

Subject: Consolidated Afloat Network Enterprise Service

1. The Joint Requirements Oversight Council (JROC) approves the Consolidated Afloat Networks Enterprise Service (CANES) Capability Development Document (CDD) and validates the attached key performance parameters (KPPs). The JROC considers key performance parameters essential to meet the mission need. The JROC delegates change authority for non-key performance parameters to the Navy.

2. The JROC delegates oversight of this program to the Navy led Information Technology Management Council (ITMC) for CANES as directed in the enclosure. The enclosure defines the approved initial KPPs, and the resource constraints placed on this program. The ITMC may approve spiral developments of this capability as long as all initial KPPs and funding constraints are not exceeded.

3. The ITMC will ensure that the CANES CDD is brought back to the JROC if the funding levels identified in the enclosure are exceeded or if an initial KPP cannot be achieved.

4. Should the Navy encounter cost growth exceeding 15 percent of the program development or full lifecycle costs, they shall return to the JROC prior to reprogramming or budgeting additional funding into the program.

JAMES E. CARTWRIGHT
General, United States Marine Corps
Vice Chairman
of the Joint Chiefs of Staff

- Delegates change authority for non-key performance parameters to the Navy
- Program oversight for CANES delegated to the Navy led Information Technology Management Council (ITMS)
- ITMC may approve spiral developments as long a all initial KPPs and funding constraints are

ome charts have additional information in notes pages

Lessons Learned/ Working Issues

- Lessons Learned:
- KPPs in IT program CDDs should be briefed with "Initial Minimums" only vice traditional Thresholds/Objectives.
- PAUC/APUC don't apply to IT acquisition; use different metric.
- For incremental acquisition, ensure IT box describes entire IT program and not just a single increment (if possible).

Working Issues:

- Tie-in IT box (requirements piece) with on-gong DOD IT acquisition reform efforts (directed by FY 2010 NDAA)

ome charts have additional information in notes pages

Conclusion

- The IT box is the right thing to do for IT programs
  - Provides required flexibility for IT program success
  - Allows more effective support to the Warfighter
- High-level guidance and agreement
  - VCJCS, JROC, DOD CIO
  - Supports FY 2010 NDAA:

    "The Secretary of Defense shall develop and implement a new acquisition process for IT systems …. Based on recommendations for the DSB Task Force on Acquisition of IT."
- Must continue close coordination to successfully implement IT box